

WHAT IS CLAIMED IS

1. An electroplating method, characterized in that a plating target
article disposed so as to be in contact with plating bath is set as a
5 cathode while a metal member disposed so as to be in contact with the
plating bath is set as an anode, and a voltage is applied between the
cathode and the anode while vibrational flow is induced by vibrating
vibrational vanes which are fixed in one-stage or multi-stage style to a
vibrating rod vibrating in the plating bath interlockingly with vibration
10 generating means, wherein plating current flowing from the anode through
the plating bath to the cathode is pulsed and alternately set to one of a
first state where the plating current keeps a first value I1 for a first
time T1 and a second state where the plating current keeps a second value
I2 having the same polarity as the first value I1 for a second time T2,
15 the first value I1 being five or more times larger than the second value
I2, and the first time T1 being three or more times longer than the second
time T2.

2. The electroplating method as claimed in claim 1, wherein the
first value I1 is 6 to 25 times as large as the second value I2, and the
20 first time T1 is 4 to 25 times as long as the second time T2.

3. The electroplating method as claimed in claim 1, wherein the
first value I1 is set to 0.01 to 300 seconds.

4. The electroplating method as claimed in claim 1, wherein the
vibrational vanes are vibrated at an amplitude of 0.05 to 10.0mm and a
25 vibration frequency of 200 to 1500 revolutions per minute.

5. The electroplating method as claimed in claim 1, wherein the
vibrational vanes are vibrated so that the vibrational flow of the plating
bath has a three-dimensional flow rate of 150mm/second or more.

6. The electroplating method as claimed in claim 1, wherein the
30 vibration generating means vibrates at 10 to 500 Hz.

7. The electroplating method as claimed in claim 1, wherein the plating target article is vibrated at an amplitude of 0.05 to 5.0mm and a vibration frequency of 100 to 300 revolutions per minute.

8. The electroplating method as claimed in claim 1, wherein the
5 plating target article is swung at a swinging width of 10 to 100mm and a swinging frequency of 10 to 30 times per minute.

9. The electroplating method as claimed in claim 1, wherein the plating target article has a face to be plated having a microstructure of a dimension of 50 μm or less.

10 10. The electroplating method as claimed in claim 1, wherein a plurality of plating target articles are accommodated in a holding container, said holding container having small holes through which liquid of the plating bath is allowed to pass and being equipped with an electrically conductive member which is brought into contact with the
15 plating target articles to make current flow through the plating target articles, and wherein said holding container is rotated around the rotational center corresponding to a non-vertical direction in the plating bath to roll the plating target articles in said holding container to thereby repeat the contact and separation between each of the plating
20 target articles and said electrically conductive member.

11. The electroplating method as claimed in claim 10, wherein the width of each of the plating target articles is equal to 5mm or less.